SITE INSPECTION SAMPLING PLAN
FOR
HOFFMAN LANDFILL
ALLEGANY COUNTY, MARYLAND
MD No. 4

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US EPA, Region III
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1.0 PROJECT DESCRIPTION

1.1 PROJECT OBJECTIVES

The purpose of this project is to test for the presence of soil, surface water, air, and groundwater contamination in the vicinity of the Hoffman Landfill, Allegany County, Maryland. The site is less than two miles from the town of Frostburg and seven miles from Cumberland, with populations of 8,075 and 23,700, respectively[1]. In addition, surface drainage from the site drains to Wills Creek and the Potomac River, both of which flow through central Cumberland.

1.2 SITE DESCRIPTION

1.2.1 SITE LOCATION

The Hoffman Landfill covers an area of 22 acres, and is located on the southeast edge of the city of Frostburg, in Allegany County, Maryland. It is adjacent to, and partly underlies, the Frostburg Industrial Park. Figure 1 shows the site location. The site is accessible through the industrial park, which is located on Route 36.

The general vicinity is rural and commercial, with residential areas nearby in Frostburg and Eckhart Mines. The bulk of the site is empty grassland between the buildings of the industrial park. The exact limits of the landfill are not apparent on the surface, and are not entirely agreed upon in file reports. Figure 2 shows the approximate outline of the landfill and surrounding buildings. Six buildings are located within 200 feet of the site. They are the Frostburg Heights apartment building and an associated nursing home, Rish Equipment, a small bank, and two buildings as part of a Comfort Inn hotel. Two of the buildings, the hotel and the apartment building, may partially overlie the fill area, but engineering studies associated with the apartment building concluded that the actual fill area was 30 to 50 feet to the east. The road to the industrial park also partly covers the site. Beall High School is located 0.7 miles northwest of the site, and the topographic map of the area shows at least three other schools in central Frostburg, 1.5 miles northwest.

The latitude and longitude of the site, taken from the U.S.G.S. Frostburg Quadrangle topographic map are 78°54'30" west longitude and 39°38'30" north latitude.

1.2.2 SITE TOPOGRAPHY AND SURFACE DRAINAGE

The site is in the Georges Creek Valley, a seven mile wide, northeast trending valley between the high ridges of Big Savage Mt. to the northwest and Dans Mt. to the southeast. The valley itself is very hilly, with elevations ranging from 1300 feet to 2240 feet (the site is at 2050 feet). The ridges of Big Savage Mt. and Dans Mt. are at 2900 feet and 2800 feet, respectively. The site is on the eastern side of a small hill which slopes 10-15 degrees down to the east and southeast.

The site is located on the crest of a divide between northern and southern branches of Braddock Run. An intermittent stream is shown crossing the site in Figure 2. This stream was not flowing during the pre-site visit. An intermittent pond is located 50 feet east of the south end of the site. Storm runoff from the south side of the landfill would drain southeast to an unnamed drainage. This flows into Braddock Run near Clarysville, 1 mile east of the site. Runoff to the north would drain northeast to the town of Eckhart Mines, then southeast in the north tributary of Braddock Run, meeting the southern tributary at Clarysville. Braddock Run then flows east to meet Wills Creek just north of Cumberland, and then flows south to the Potomac River.

The west side of the hill drains to the west to Georges Creek, which then flows south to the Potomac. Direct drainage from the site should not go west, but groundwater from the site may discharge in that direction.

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1.2.3 GROUNDWATER

The groundwater at the site is 15 feet below the surface. Surface groundwater flows east with topography, but deeper groundwater follows the dip of the rocks underneath and flows west. Monitoring wells drilled in connection with the landfill were drilled to the west.

The site lies within the Monongahela Formation outcrop area. All rock formations in Allegany County are potential aquifers, containing groundwater in fractures and secondary solution cavities[2]. The aquifer at the site consists of shallow groundwater in the weathered zone, and deeper groundwater in fractures and pores in the Dunkard Group, Monongahela Group, and the Conemaugh Group. The deliverability of wells within 1 mile averages 8.5 gpm.

The closest spring is in the town of Eckhart, [redacted]. It has been sampled in previous studies of the site. The small pond and Braddock Run may also be in communication with the groundwater, and both have also been sampled. In addition, the Hoffman Drainage Tunnel connects the mines at Borden Shaft (almost 2 miles southwest of the site) to an outlet near Clarysville on Braddock Run. The tunnel was built in 1903 to drain water from the Pittsburgh Coal Seam, and may have an effect on groundwater level and movement in the area.

According to the Ecology and Environment report[3], the Allegany County Department of Health has done a survey to locate wells near the landfill. Four wells were found, but none were used for domestic purposes. A recent printout of wells permitted since 1969 shows 465 wells located within four miles of the site, of which 401 are domestic water wells and 3 are municipal supply wells.

1.2.4 SOIL CONDITIONS

The soil directly at the site has been disturbed by strip mining and covering of the waste on the landfill, and is shown on the Allegany County soil survey map as such[4]. The surrounding soil, and presumably the soil at the site before mining, belongs primarily to the Gilpin Series. This series consists of moderately deep, well drained upland soils formed by the weathering of acid shale, siltstone, and thin sandstone beds. The average depth to bedrock for Gilpin Series soils is 26 inches, but test borings on the site in conjunction with construction of the apartment building showed bedrock at a depth of 3 to 10 feet. The soil is a silt loam, which is relatively fine-grained, and is moderately susceptible to erosion. The Allegany County soil survey lists the following parameters for the soil: infiltration rate is 0.6-2.0 in./hr., water capacity is 0.16-0.20 in./in. of soil, and pH is 4.5-5.5.

1.2.5 CLIMATE

The climate of western Maryland is temperate and humid. Average annual precipitation is 41 inches[5], and the two-year twenty four-hour rainfall is 2.7 inches[6].

1.2.6 MUNICIPAL AND RESIDENTIAL WATER USE

Many of the small towns in the area supply water through municipal wells, springs, and reservoirs. The municipalities, water sources, and populations served are listed in Table 1. The two largest population centers within 15 miles, Frostburg and Cumberland, both use surface water reservoirs that are outside of the drainage area that could be affected by surface flow from the Hoffman site. Several other smaller systems (Midlothian, Carlos-Shaft, Klondike, Lonaconing-Midland, and Bel Air-Pinto) also use reservoir sources that are outside of the drainage basin. There are no direct surface water intakes from Braddock Run, Wills Creek, or the Potomac River within 15 miles of the site.

Several of the towns within five miles supply water from springs and/or wells from the Dunkard, Monongahela, and Conemaugh Groups, or from aquifers stratigraphically below these. These include Frostburg (a secondary supply from springs four miles west of the site), Mt. Savage, Barrelville, LaVale, Clarysville, and Vale Summit. The closest of these is a well in Clarysville that serves twelve residences. A spring on Braddock Run, 2.5 miles east of the site, serves about 450 residences in LaVale.

Approximately 401 residential wells are located within four miles of the site. It is not known what aquifer each well is completed in, but it is assumed that they were drilled as shallow as necessary, so are probably completed in the same surface aquifer as that which underlies the landfill site. [redacted]

1.2.7 SENSITIVE ENVIRONMENTS LOCATIONS

The southern branch of Braddock Run is not designated as a wetland, but the northern branch, through Eckhart Mines, is. From a probable point of entry in Eckhart, 0.9 miles north of the site, Braddock Run is designated as a palustrine wetland all the way to the intersection of Braddock Run with Wills Creek, a distance of 7.7 miles. From there, Wills Creek flows along an artificial concrete channel to its intersection with the North Branch Potomac River. The Potomac River is then designated as a riverine wetland downstream from that point. This wetland information is incomplete, as National Wetland Inventory Maps, which would distinguish between open-water and other wetlands for Hazard Ranking System scoring, have been unavailable.

The Potomac River stretch below the landfill is used for recreational fishing. Braddock Run was barren of fish for many years due to the acid mine drainage from the Hoffman Drainage Tunnel, but brook trout have recently returned to the stream[7].

Several parks and wildlife areas are located within four miles of the site, including the Savage River State Forest, Dans Mt. State Park, and the Dans Mt. Wildlife Management Area.

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1.2.8 SITE HISTORY AND PREVIOUS STUDIES

Coal was first discovered in the Georges Creek Basin in 1782, and the area became the principle coal producing basin of the state[5]. The topographic map of the area indicates extensive strip mining in the valley, and there has also been underground mining.

The site itself is an abandoned coal strip mine (dates of operation unknown) which was converted to a sanitary landfill in 1967. The strip mine was about 1900 feet long, 110 feet wide at one end and 50 feet wide at the other, and was 50 feet deep. The coal bed mined is unknown, but was presumed by Otten (1972)[8] to be the Lower Sewickley (also known as Tyson) Coal, which is about 2 feet thick at the site. Two other similar strip mines were turned into landfills nearby. The Vale Summit Landfill is located about 1 mile south of Hoffman, and may be at least partly in the Braddock Run drainage basin. Because of this, surface water, and possibly groundwater, sampling will have to be conducted in such a manner as to distinguish any potential contamination sources between the Hoffman and Vale Summit Landfills. The Cabin Run Landfill is located about 1.75 mi. southwest of Hoffman, and is in a different watershed.

The landfill was partially financed by the U.S. Public Health Service to the Maryland Department of Health as a project to demonstrate the effectiveness of using abandoned strip mines as landfills[8]. The landfill operated from 1967 to late 1971. Because of the demonstration nature of the landfill, many precautions and monitoring systems were in place throughout the operation of the landfill. These included laying a three foot bed of compacted earth (from spoil piles) at the base of the landfill to slow infiltration of leachate into groundwater and installation of thirteen monitoring wells (three on the waste pile, and ten just to the west) to constantly evaluate groundwater levels and quality. Also, a boron tracer substance was deposited with the waste in the landfill to help trace the origin of any contamination back to the site.

A rough summary of the waste generators and waste types is given by Ecology and Environment (1981)[3]. The list includes Allegany County, Hercules Corp., Celanese Corp., Kelly Springfield Tire, and PPS Industries, all centered in Cumberland. The landfill was operated by Allegany County, and the waste consisted of municipal waste, garbage, refuse, and sewage sludge. Also, an unknown amount of asbestos, solvents, paint, and epoxy resin refuse was deposited there. The final capacity of the landfill, just before it closed in 1971, was 285 tons/day. If extrapolated over the five year life of the project, this gives a maximum of about one-half million tons of waste deposited.

Several studies have previously been performed on the landfill. In early 1967, samples were collected at one privately owned well west of the site, the Lewis Spring, and Braddock Run by the Division of Solid Wastes of the Maryland Department of Health[8]. Samples were apparently collected and monitored by the state over a three and a half year period, and did not indicate any significant contamination. The analyses of these samples included only iron, chloride, nitrogen, solids, hardness, and pH, and may not have been comprehensive enough to indicate other forms of contamination. The only samples to show degradation of water were from the small pond. These analyses show that there was a significant increase in iron, chloride, and total solids over the period of analysis.

As of the writing of Otten's report (1972), the state Department of Health was drilling monitoring wells near the site to establish a more extensive chemical monitoring system. The exact locations of these wells is unknown, since the only map found in the files which shows them was handdrawn and not to scale. In addition, it was drawn before any of the present roads or buildings were built, so plotting the exact locations of these wells today is difficult. The file map is shown in Figure 3. One well, which may or may not be one of the original monitoring wells, was found just off of the northeast corner of the hotel parking lot during the pre-site visit. Discussions with county officials indicate that, though some of the wells may have been paved over, most should still be available for sampling. The drilling and results from these wells are discussed in a report to Chief of the Division of Solid Waste Control called Geology and Hydrology of the Hoffman Sanitary Landfill, Allegany County, Md., dated May, 1971. The wells were drilled to the base of the coal bed, but not through it. They ranged in depth from 50-70 feet, and averaged 57 feet deep. The major conclusion of this report was that there was no direct interaction between the leachate (monitored by three wells on the landfill) and the groundwater (monitored by the ten wells to the west).

Sampling was done on two of the monitoring wells, the small pond, and the Hoffman Drainage Tunnel by Ecology and Environment in 1980. The same contractor sampled four monitoring wells (including resampling the two mentioned above) and a nearby water supply well (at Maple Hurst Country Club) in 1981. One of the monitoring wells showed elevated concentrations of nickel (78 ppb) and vinyl chloride (28 ppb).

In addition to the water studies, the possibility of methane buildup in the basements and crawl spaces of the adjacent apartment buildings was studied by the state prior to 1980. Three methane wells were drilled on site, and sampling was conducted in the basements of the buildings. In 1980 the gas was analyzed for toxic gases, and a sample containing 10 ppb toluene and 100 ppb trichlorofluoromethane was found. A methane collection system is still in operation in the building, and gas wells are still being sampled by Allegany County, and are available for sampling.

1.2.9 PERMIT AND REGULATORY HISTORY

The landfill was operated by Allegany County, and was continually monitored by the Maryland State Department of Health for contamination for at least three and a half years of its operation.

1.2.10 REMEDIAL ACTION TO DATE

There has been no known remedial action to date.

2.0 GEOLOGY

2.1 BACKGROUND GEOLOGY

Descriptions of the geology of the Frostburg area are given in Vokes and Edwards (1974), and the latest geologic map is of the Avilton and Frostburg quadrangles[9]. The site is located in the Appalachian Plateau Province. The plateau extends from Alabama to Pennsylvania, is bordered on the east by the Valley and Ridge Province, and on the west it grades into the flat lying rocks of the stable craton. The plateau consists of gently folded Paleozoic sedimentary rocks, and is highly dissected, resulting in the mountainous topography.

The rocks in the area of the site are, from oldest to youngest, the Casselman Formation of the Conemaugh Group (Pennsylvanian), the Monongahela Group (Pennsylvanian or Permian), and the Dunkard Group (Permian). The Casselman Formation, which crops out about 0.4 miles east of the site, consists of interbedded sandstone, siltstone, and shale, with minor limestone and coal beds. The thickness ranges from 450-500 feet.

The landfill is on the contact between the Monongahela Group and the Dunkard Group. The outcrop area of the Monongahela Group is 0.2-0.6 miles wide, and strikes northeast. The Monongahela Group consists of interbedded sandstone, siltstone, shale, and coal, with several thin limestone beds. The group is 250 feet thick, and includes several important coal beds, including the 14 foot thick Pittsburgh Coal, which is the thickest coal bed in the northern Appalachian coal fields.

The Dunkard Group is fairly limited in extent, and only crops out on the tops of hills. It consists of interbedded siltstone, shale, sandstone, limestone, and a few discontinuous coals. The group is up to 300 feet thick.

The site is located on the southeast flank of the broad Georges Creek Syncline. The syncline plunges to the southwest, and the rocks at the site strike northeast and dip 5 degrees to the northwest. No faults are indicated in the area of the site.

2.2 HYDROGEOLOGY

The groundwater resources and springs of Allegany County are described by Slaughter and Darling (1962)[2]. They present detailed tables of chemical data from well water and springs, and also drillers logs.

The landfill site is in the Georges Creek Basin Water Province, which is coincident with the topographic Georges Creek Valley. All of the rocks in Allegany County are groundwater reservoirs. Although they are tightly cemented, groundwater exists in solution cavities, fractures, and bedding planes. The groundwater in the deeper aquifers is artesian, but there are few flowing wells in the province. This artesian water is expected to move downdip, towards the west and the center of the Georges Creek Syncline.

The major aquifers in the site area are the Conemaugh Group and the Monongahela Group. The Dunkard Group only caps isolated hills, and is not important as an aquifer. Groundwater from wells and springs in the Conemaugh Group, which underlies the site, is used for public water supply in the towns of Barton, Lonaconing, Midland, and Mt. Savage. A wide range of values for various parameters are reported for the Conemaugh Group. Depths of wells range from 22-1354 feet, and yields range from 1-170 gpm. Transmissibility coefficients were calculated to be 6100 gpd/ft and 10,300 gpd/ft.

The Monongahela Group does not yield as much water as the Conemaugh Group, but can still yield quantities sufficient for domestic and farm use. Well depths range from 60-85 feet, and yields from 2-20 gpm. Because of mining and tunneling, the Monongahela Group may be totally drained in some places.

At the site, groundwater exists (in the Monongahela Group, or in the soils above it) at a depth of 15 feet. Wells within 1 mile average a flow of 8.5 gpm and range in depth from 50-575 feet, and average 164 feet deep. The site is near the outlet of the Hoffman Drainage Tunnel, which may have affected groundwater location or movement at the site.

Springs are common in Allegany County, usually issuing from limestones and dolostones, but also coming from the Conemaugh and Monongahela Groups. The biggest spring in the Georges Creek Basin is reported to be a 300 gpd spring in the Monongahela Group near Lonaconing, about 6 miles southwest of the site. Springs in the Conemaugh Group range in discharge from 1-150 gpd. Several towns use springs for water supply, including Mt. Savage, Lonaconing, Barton, LaVale, and Frostburg.

The closest known springs to the site are the previously mentioned Lewis Spring and Hoffman Drainage Tunnel. According to Otten (1972), springs are common in the area at the base of coal beds, as coal commonly overlies impermeable clay. These springs are often acidic, due to the leaching of sulfides from the coal, and two springs were reported to have a pH of 3.5. However, the existence of this impermeable underclay may protect underlying groundwater, and reaction of the acid mine water with the waste may neutralize the acid. Because of these, Otten (1972) concludes that abandoned coal mines are probably the safest places to dispose of solid wastes in terms of degradation of groundwater.

3.0 SAMPLING PLAN

3.1 INTRODUCTION

3.1.1 LIMITATIONS

A summary of sampling sites is shown in Table 2. A map of proposed sampling locations is shown in Figures 4 and 5.

The purpose of this study is to identify possible groundwater, surface water, and soil contamination. The contents of the waste deposited are largely unknown, so possible contaminants are not

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known. Therefore, all samples (except air samples) will be analyzed for all EPA Priority Pollutants. Air samples will be analyzed only for volatile organic compounds. Soil samples will have an additional analysis done on them for asbestos. Since a boron tracer was put into the landfill during its operation, groundwater and surface water samples will also be analyzed for boron.

Several problems may be encountered in the collection of samples and the interpretation of analysis results. In a recent phone communication with Mr. Walter Finster of the Allegany County Department of Health, Mr. Finster indicated that the recent drought has had an effect on groundwater and surface water levels in the county. Several private and public sources of water have gone dry, and the county was occupied in trying to line up additional supplies for affected communities. The drought may affect surface water and groundwater levels in the landfill area, and may limit sampling locations.

The most direct surface water target for potential contamination is Braddock Run. The Vale Summit Landfill is partly located in the Vale Summit drainage area, and is upstream of Hoffman. Also, the Hoffman Drainage Tunnel empties into Braddock Run just south of Clarysville. As a result, potential contamination found in this stream may have alternate sources other than the Hoffman landfill. Although there are apparent groundwater divides between the landfills, and shallow groundwater at Hoffman should be separate from the aquifer at Vale Summit, it is also possible that springs downgradient of Hoffman could have multiple sources of contamination.

Finally, some of the original monitoring wells may have been covered during construction of the industrial park and hotel. This may limit the locations available for groundwater sampling.

3.2 LOCATIONS OF SAMPLES

3.2.1 GROUNDWATER

A total of seven groundwater samples will be taken, two from monitoring wells, four from drinking water wells, and one duplicate from one of the residential wells. All samples will be collected, packaged, and shipped according to standard procedures, and will be analyzed for TCL/TAL parameters and boron.

Groundwater at the site will be sampled from one of the ten monitoring wells to the west and one of the three monitoring wells on top of the site. The western sample is numbered GW6 and the site sample is numbered GW7 on Figure 4. The wells will be purged until three well volumes of water have been removed, and then the sample taken in a stainless steel bailer and distributed into sample jars.

Four drinking water wells will be sampled. Two samples will be taken from the east, one from the Clarysville community supply well (sample GW1), and one from a residence along Washington Hollow Road (sample GW2). The latter sample will be taken twice, for a duplicate (sample GW5). One sample will be taken from west of the site, from a residential well near Grahamtown. If this residential well is no longer available (Grahamtown is supplied by the Frostburg system), the well at the Maple Hurst Country Club will be sampled. This will be sample GW3. For background, a well from the north of Eckhart will be sampled (sample GW4). Residential wells have been chosen on the basis of distance (to get as near as possible to the site), aquifer (to try to get only samples from the Monongahela and Dunkard Groups), and availability. The residential samples will be collected directly into sample jars, preferably before any treatment on the water.

3.2.2 SURFACE WATER

Surface water samples will be taken from three locations. Samples will be collected directly into sample jars and packaged

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and shipped according to standard procedures. All samples will be analyzed for TCL/TAL parameters and boron.

Contamination, in the form of iron and chlorides, has already been reported in the pond directly east of the site. This pond will be sampled again, this time with the wider range of analyses. The pond sample will be numbered SW3.

Surface runoff will be sampled from two locations. Runoff to both the north and south end up meeting in Clarysville, 1 mile to the east. Braddock Run will be sampled just below the place where the streams join together (sample SW2).

In order to separate potential contamination in Braddock Run from other sources, a background sample will be collected on the south branch of Braddock Run below the Hoffman Drainage Tunnel outlet, but upstream of the probable point of entry of runoff from Hoffman (sample SW1). If similar contamination is found in this sample and the downstream sample, the likely source of the contamination would be either the Vale Summit Landfill or the Hoffman Drainage Tunnel.

Two samples of leachate on site are planned. The location of these may depend on weather conditions at the time of sampling, due to the recent drought. The samples will be numbered LT1 and LT2. Leachate analyses would help to characterize the site and link groundwater or surface water contamination back to the leachate.

3.2.3 SEDIMENT

Four sediment samples will be taken from the same three location as the surface water samples. Samples will be collected, packaged, and shipped according to standard procedures. All samples will be analyzed for all TCL/TAL parameters.

A sediment sample from the pond will be numbered SED3. The upstream Braddock Run sample will be numbered SED1, and the downstream sample near Clarysville will be SED2. A duplicate

Leachate Samples aren't included in Table 2

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sediment sample will be taken at the Clarysville location, and will be numbered SED4.

3.2.4 SOIL

Seven soil samples will be taken from at least six locations. The soil samples will be collected by an auger from a depth of 0 to 2 feet. All samples will be collected, packaged, and shipped according to standard procedures and analyzed for all TCL/TAL parameters. They will also be analyzed for asbestos, which is reported to have been deposited in the landfill.

Three of the samples will be from over the site, in the locations shown in Figure 4. They will be numbered S2, S3, S4, and a duplicate of one will be labeled Also, if any of the waste is directly exposed by erosion, as was the case in 1980, a sample will be taken of the exposed waste.

Samples will be taken on the property of the hotel and the apartment building in locations shown on Figure 4. The hotel sample will be number S6, and the apartment sample will be S5.

Finally, a background sample will be collected from the eastern side of the hill directly south of the hotel and west of the landfill, as shown in Figure 4. This sample will be numbered S1.

3.2.5 AIR

Allegany County continually samples and analyzes soil gas from the landfill which seeps into the apartment building. This building also has a blower system which purges gas from the crawl space beneath it.

Air will be sampled from three locations in the crawl space beneath the Frostburg Heights apartment building. The samples will be collected over a twelve hour period through a filter cartridge and be packaged and shipped according to standard procedures. They will be analyzed for volatile organic compounds. The three samples will be numbered A1, A2, and A3. A fourth, duplicate sample in the same location as A3 will be numbered A4.

Background samples will be collected upwind of the landfill. One will be numbered A5, and a duplicate will be numbered A6.

4.0 QUALITY ASSURANCE

Quality assurance and quality control (QA/QC) for this sampling program be provided by a combination of field blanks and duplicates. Two aqueous field blanks will be taken to test for contamination possibly introduced by sample containers and preservatives. One will be taken at a monitoring well on the first day of sampling, and the second will be taken during surface water sampling on the second day. One duplicate aqueous sample will be taken from the residential well on Washington Hollow Road. A duplicate soil sample will be taken on top of the landfill along with sample S3, and a duplicate sediment sample will be taken at the sampling location near Clarysville. Two duplicate air samples will be taken, one along with the samples in the basement of the apartment building and one along with the background sample. Duplicate samples will test the reliability of sampling procedures and results.

All sample collection, preservation, QA/QC, and chain-of-custody procedures used during sampling and transportation activities will be in accordance with the standard operating guidelines (SOGs) specified in the Engineering and Support Branch Standard Operating Procedures and Quality Assurance Manual, U.S. Environmental Protection Agency, Environmental Services Division, Region IV, Atlanta, Georgia, April 1986.

4.1 FIELD ACTIVITIES

Due to the general weather conditions associated with the Frostburg area during the winter months, it is recommended that site sampling be postponed until the second quarter of 1992. This postponement will help to ensure that the site is not covered with snow during the sampling visit and that surface

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water sample locations will not be frozen. Residents with private wells will be contacted after the site sampling visit has be scheduled.

All environmental samples and non-sampling data will be collected over a two day period. The field team will consist of 4 people and they will be scheduled to depart from the Maryland Department of the Environment (MDE) offices on the morning of the first day. The field work will begin with a site reconnaissance in the afternoon of the first day to verify that planned sample locations are appropriate and accessible. During the reconnaissance, ambient air will be monitored with an OVA, HNu and radiation detector. A drive-by survey will verify the location of the private well users and the population within approximately 1/4 mile of the site. If necessary, original plans will be modified.

Two teams will be deployed. Sampling will start after the original sample plan and any necessary modifications are confirmed. On the afternoon of the first day, the first sampling team will purge and sample the two groundwater monitoring wells. The second team will set-up the air sampling equipment in the crawl space of the apartment building homes and establish an appropriate upwind sample location for background samples.

On the morning of the second day the first team will sample the four drinking water wells. Unfiltered samples from the residential well will be collected from the spigot nearest the well. The resident will be asked to complete a well system questionnaire regarding well depth, piping materials, persons per household, etc. The first team will also collect surface water and sediment samples, starting with the most downstream sample and proceeding upstream. The second team will pick-up and dismantle the air sampling equipment. In addition, the second team will collect the seven soil samples and the leachate samples.

5.0 INVESTIGATION-DERIVED WASTE PLAN

Investigation-derived waste includes personnel protective equipment, disposable sampling equipment, purged groundwater, and soil not collected as a sample. Personnel protective equipment and disposable sampling equipment (DE) will be decontaminated and rendered nonhazardous. All dry personal protective equipment and DE will be doubled-bagged and deposited off-site at MDE (Building 51).

Purged groundwater from the monitoring wells will be collected in 55 gal drums and stored. Appropriate disposal methods will be determined based on the results of the analyses. Purged groundwater from the drinking water wells is expected to be nonhazardous under the Resources Conservation and Recovery Act (RCRA). Arrangements will be made to allow for the purged groundwater from the drinking water wells to be poured onto the ground next to the wells. Any quantities of soils, leachates from the site, and surface water from the pond directly east of the site that are not collected as samples will be collected and stored pending the results the analyses. Excess quantities of surface water from Braddock Run will be returned directly to the stream.

6.0 PROJECT MANAGEMENT

The project manager for the Hoffman Landfill will schedule field activities and personnel requirements, verify access authority, direct and oversee all onsite and offsite activities associated with the investigation. The project manager will also document and manage all collected samples. A total of 31 CLP samples are anticipated.

6.1 FIELD EQUIPMENT/HEALTH AND SAFETY

Necessary safety includes OVA, HNu, and Victoreen Radiation Detector. Field respiratory protection will be level C during site reconnaissance. If non-methane contaminants and radiation levels are below background levels, the reconnaissance will continue at level D. Onsite sampling will commence at level D unless radiation and volatile contaminants are detected. Offsite sampling will be conducted at level-D. Field dress for reconnaissance will include Tyvec suits, disposable gloves, slush boots, and hard hats. For onsite sampling, the field dress will also include butyl or nitrile gloves and faceshields. Offsite dress will include regular work cloths, work boots, and disposable gloves.

6.2 PROJECT SCHEDULE

This project was started in November 1991 and is scheduled for completion in July 1992. The field work will begin in the early spring and validation completed by the end of June. The final report and HRS Prescore will be completed by the end of July.

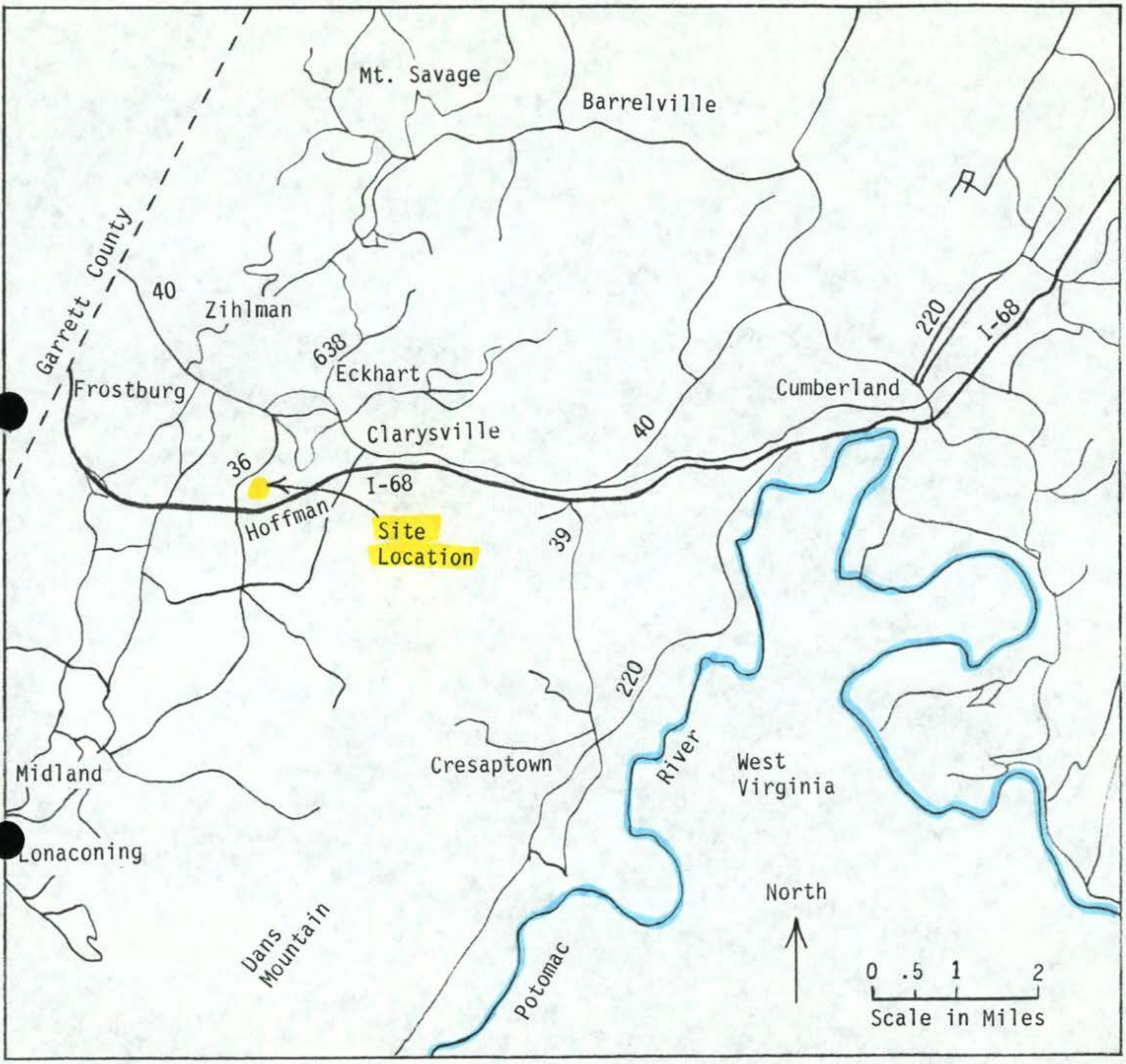
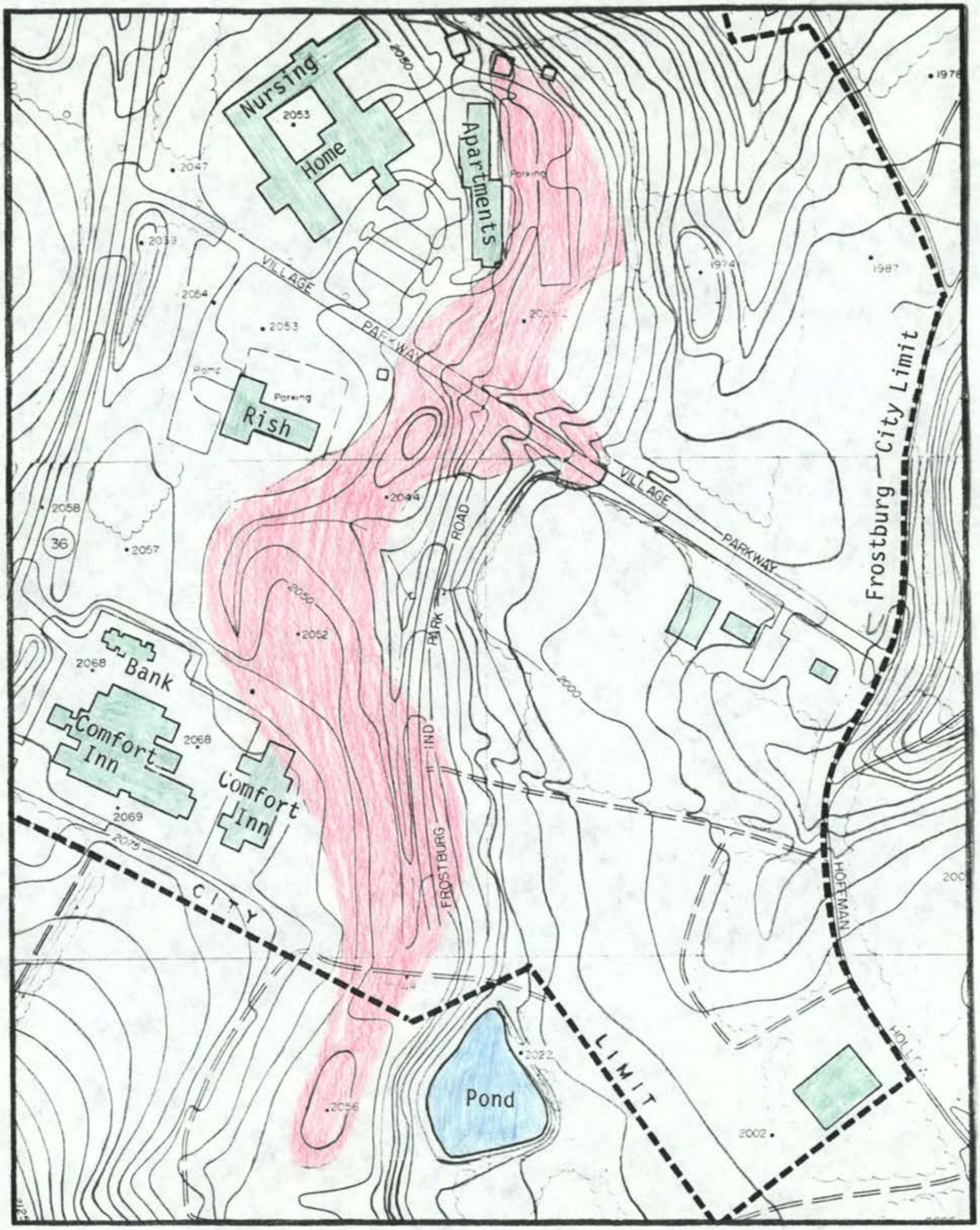


Figure 1 - Index Map of western Allegany County, Maryland, showing towns, roads, and location of the Hoffman Landfill.



0' 500' 1000'

Scale

North

Figure 2 - Map showing the locations of buildings in the Frostburg Industrial Park. Red shaded area is the approximate area of the Hoffman Landfill.

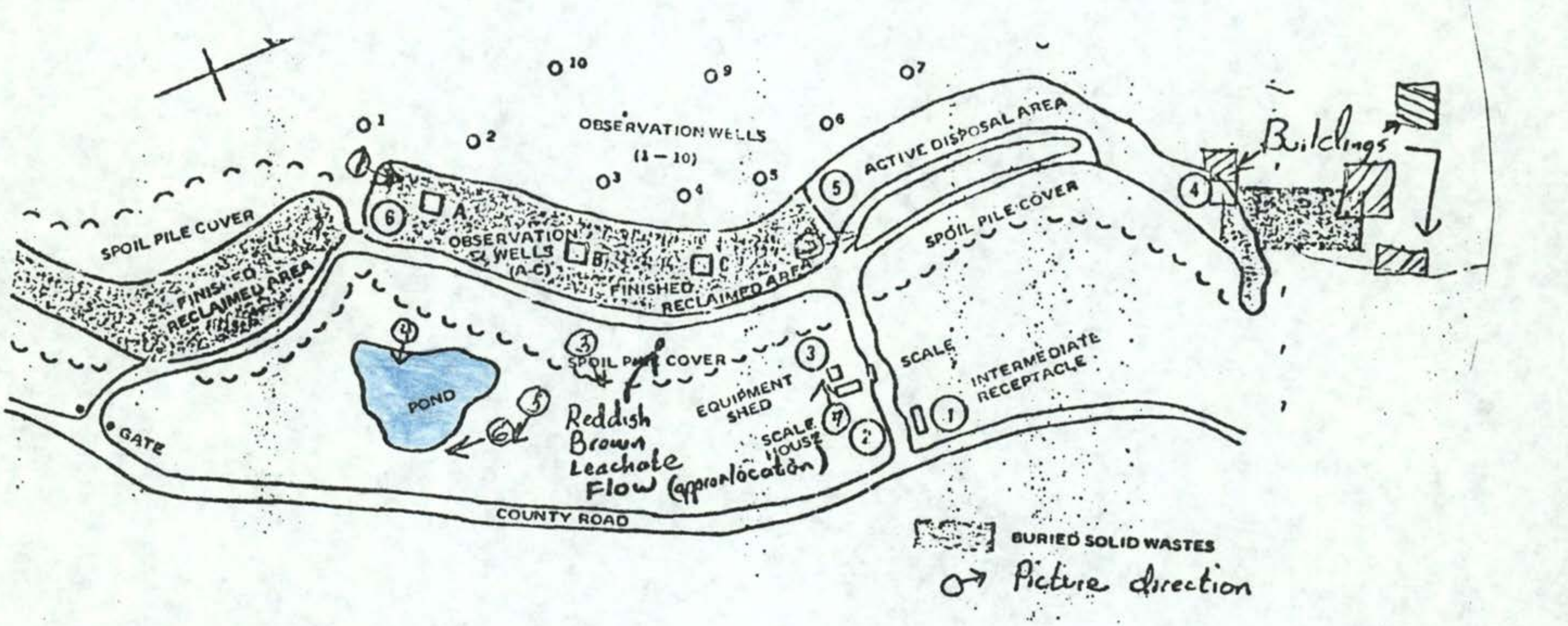


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Figure 3 - File map showing locations of three onsite leachate wells and ten offsite monitoring wells. Scale and location of wells with respect to current buildings on the site are unknown.

ORIGINAL (Red)

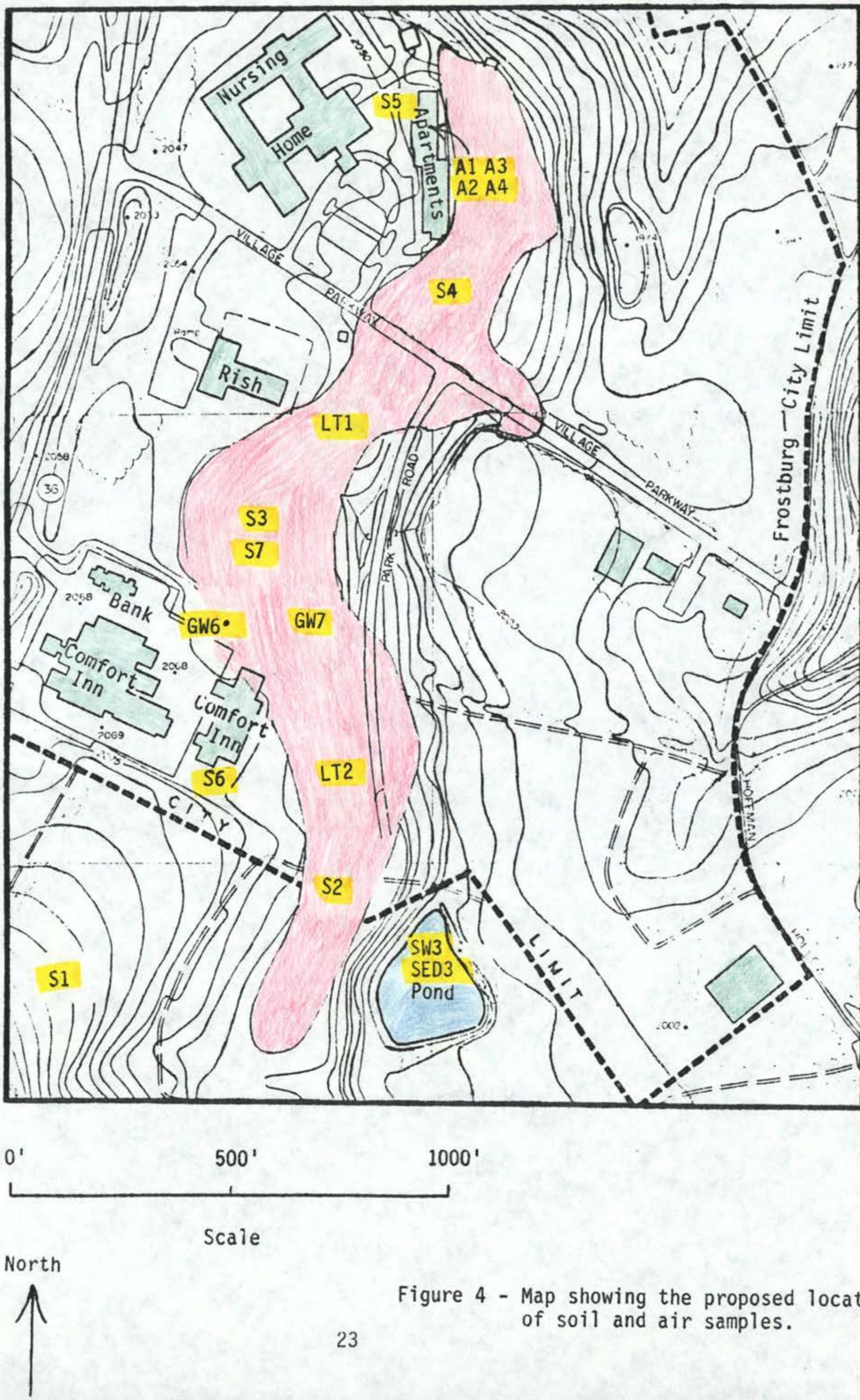

Figure 4 - Map showing the proposed locations of soil and air samples.

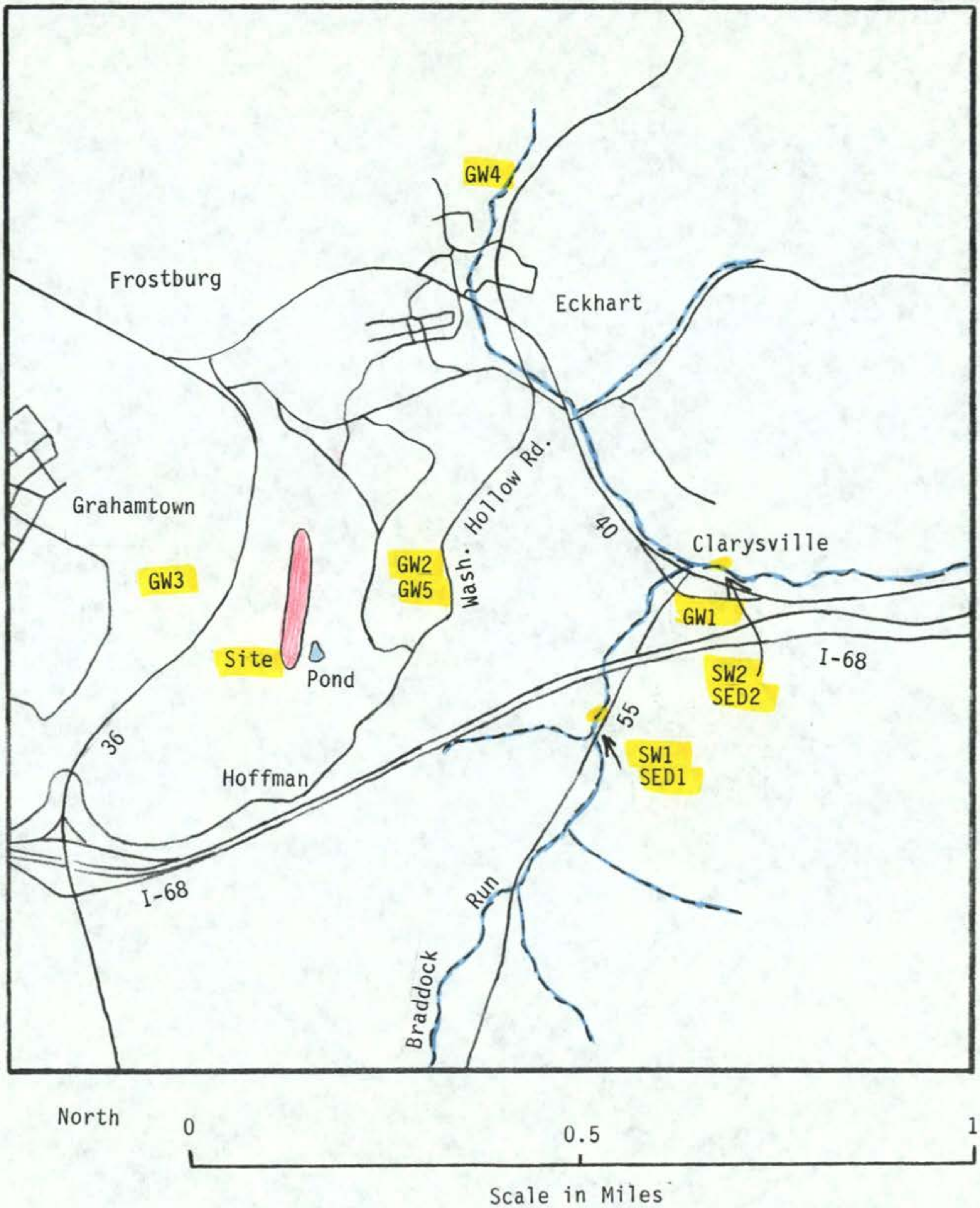

Figure 5 - Map showing the locations of proposed surface water and groundwater samples.

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(Red)

TABLE 1

LIST OF MUNICIPAL GROUNDWATER SOURCES

Town	Population Served	Remarks
Frostburg/Eckhart	8,075	Main supply is from Piney Creek Reservoir. Secondary supply from wells and springs four miles west of site.
Mt. Savage	413	Five wells and one spring.
Barrelville	100	Two wells.
LaVale[1]	4,500	Two springs and four wells. One spring, 2.75 miles east of site, is from Greenbrier Formation, and serves about 1125 people.
Clarysville[1]	30	One well.
Vale Summit/Hoffman[1]	200	One spring.

1. Groundwater supplies within four miles that may be potentially affected.

Other towns within four miles are served by reservoirs outside of the drainage area potentially affected by Hoffman Landfill.

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(Red)

TABLE 2

SUMMARY OF SAMPLING LOCATIONS

Sample Number	Type	Location	Rationale
GW1	Aqueous	Clarysville municipal supply.	Identify release into groundwater; 30 potential targets.
GW2	Aqueous	Residential well ½ miles east.	Identify release into groundwater; 2.5 potential targets.
GW3	Aqueous	Residential well or country club well ½-1 mile west.	Identify release into groundwater; at least 2.5 targets.
GW4	Aqueous	Residential well 1 mile north.	Quality control; background sample.
GW5	Aqueous	Duplicate of 001-GW2.	Quality control.
GW6	Aqueous	Monitoring well west of site.	Verify release into groundwater; site characterization.
GW7	Aqueous	Monitoring well on site.	Verify release into groundwater; site characterization.
SW1	Aqueous	Braddock Run south of Clarysville.	Quality control; background sample.
SW2	Aqueous	Braddock Run east of Clarysville.	Identify release into surface water; human consumption and wetland targets.
SW3	Aqueous	Pond southeast of site.	Identify release into surface water.
SED1	Sed.	Braddock Run south of Clarysville.	Quality control; background sample.
SED2	Sed.	Braddock Run east of Clarysville.	Identify release into surface water; human consumption and wetland targets.
SED3	Sed.	Pond southeast of site.	Identify release into surface water.

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TABLE 2 (continued)

Sample Number	Type	Location	Rationale
S1	Soil	Northeast side of hill south of hotel.	Quality control; background sample.
S2	Soil	On south end of site near end of Industrial Park Road.	Identify release to soil; waste characterization.
S3	Soil	On site between Rish Equipment and hotel.	Identify release to soil; waste characterization.
S4	Soil	On north end of site near apartment building.	Identify release to soil; waste characterization.
S5	Soil	On front lawn of apartment building.	Identify resident contamination with potential targets.
S6	Soil	In dirt lot on south side of hotel building.	Identify release to soil; potential worker targets.
S7	Soil	Duplicate of 001-S3.	Quality control.
A1	Air	Crawl space of apartment building.	Identify release to air with resident targets.
A2	Air	Crawl space of apartment building.	Identify release to air with resident targets.
A3	Air	Crawl space of apartment building.	Identify release to air with resident targets.
A4	Air	Duplicate of 001-A3.	Quality control.
A5	Air	Upwind of landfill.	Quality control; background sample.
A6	Air	Upwind of landfill.	Quality control.

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(Red)

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